

CLAIMS

[1] A data processing apparatus for determining a quantization scale of the quantization when quantizing and encoding processed data, comprising:

5 a specifying circuit for specifying a bit rate by which the encoded data is supplied for decoding at the time of the decoding based on the encoded data obtained by the encoding;

an encoding difficulty detection circuit for detecting
10 the difficulty of encoding of the processed data; and

a quantization control circuit for controlling the quantization scale based on the bit rate specified by the specifying circuit and the encoding difficulty detected by the encoding difficulty detection circuit.

15 [2] A data processing apparatus as set forth in claim 1, wherein said quantization control circuit controls said quantization scale so as to make said quantization scale smaller the higher said encoding difficulty detected by said encoding difficulty detection circuit.

20 [3] A data processing apparatus as set forth in claim 1, wherein

said apparatus further has

an indicator generation circuit for generating, based on said encoded data, indicator data for specifying an
25 amount of stored data of a storage circuit provided at a

decoding side of said encoded data and storing said encoded data for supply for decoding and

a target calculation circuit for calculating a target bit rate indicating a target value of said bit rate based
5 on said indicator data generated by said indicator generation circuit, and

said quantization control circuit controls said quantization scale so that said bit rate specified by said specification circuit approaches said target bit rate
10 calculated by said target calculation circuit.

[4] A data processing apparatus as set forth in claim 3, wherein said target calculation circuit calculates said target bit rate based on a difference between a designated final target bit rate and an average bit rate of past
15 encoded data so that said difference becomes small.

[5] A data processing apparatus as set forth in claim 4, wherein said target calculation circuit calculates said target bit rate so as to avoid said storage circuit underflowing.

20 [6] A data processing apparatus as set forth in claim 3, wherein said target calculation circuit calculates said target bit rate so as to avoid said storage circuit underflowing.

[7] A data processing apparatus as set forth in claim 3,
25 wherein said specification circuit specifies said bit rate

of said encoded data read from said storage circuit for supply for decoding at said decoding side.

[8] A data processing apparatus as set forth in claim 7, wherein said specification circuit specifies a bit rate of
5 said encoded data based on an average amount of bits of pictures in past encoded data and a picture rate of said pictures.

[9] A data processing apparatus as set forth in claim 1, wherein when said encoded data is comprised of a plurality
10 of pictures, said quantization control circuit controls said quantization scale of said plurality of pictures.

[10] A data processing apparatus as set forth in claim 3, wherein said quantization control circuit determines a new quantization scale and performs the above control based on
15 a ratio between said bit rate specified by said specification circuit and said target bit rate calculated by said target calculation circuit and the previously determined quantization scale.

[11] A data processing apparatus as set forth in claim 3,
20 wherein said quantization control circuit determines a new quantization scale and performs the above control based on a difference between said bit rate specified by said specification circuit and said target bit rate calculated by said target calculation circuit and on the previously
25 determined quantization scale so as to suppress

overshooting and undershooting of said bit rate.

[12] A data processing method for determining a quantization scale of quantization when quantizing and encoding processed data, comprising:

5 a first step of specifying a bit rate by which the encoded data is supplied for decoding at the time of the decoding based on the encoded data obtained by the encoding;

10 a second step of detecting the encoding difficulty of the processed data; and

 a third step of controlling the quantization scale based on the bit rate specified at the first step and the encoding difficulty detected at the second step.

[13] An encoding device having:

15 a quantization scale calculation circuit for calculating the quantization scale,

 a quantization circuit for quantizing the processed data based on the quantization scale calculated by the quantization scale calculation circuit, and

20 an encoding circuit for generating the encoded data by encoding the quantization result of the quantization circuit,

 the quantization scale calculation circuit comprising:

 a specifying circuit for specifying a bit rate by

25 which the encoded data is supplied for decoding at the time

of decoding based on encoded data generated by the encoding circuit,

an encoding difficulty detection circuit for detecting an encoding difficulty of the processed data, and

- 5 a quantization control circuit for controlling the quantization scale based on the bit rate specified by the specifying circuit and the encoding difficulty detected by the encoding difficulty detection circuit.